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Mr. Ridley-Thomas
Supervisor, Second District
Board of Supervisors
County of Los Angeles
866 Kenneth Hahn Hall of Administration
Los Angeles, California 90012
SENT VIA EMAIL

Dear Mr. Ridley-Thomas:

Thank you for your invitation to review the report entitled "Inglewood Oil Field Communities Health Assessment" that was completed by the Los Angeles County Department of Public Health at the request of the Los Angeles County Board of Supervisors.

Please find my review of the Final Report of Community Health Evaluation and the Inglewood Oil Field as requested:

The soundness of the methods. Methods used in the Health Situation Analyses.

This evaluation study included the calculation, estimation and assessment of different key health indicators related to the potential health impact of risks factors associated with the exposure of petroleum products in the communities in proximity of the Inglewood Oil Field.

These assessments included review of the leading causes of mortality and premature death, analysis of low-birth weight births, analysis of birth defect data and analysis of cancer data for five types of blood-related cancers for the periods 1972-1999 and 2000-2002.

It is important to note that the assessments done are not etiologic epidemiological studies and their study designs do not allow the recognition of a causal relationship between exposure to petroleum risk factors and population health outcomes. These are ecological studies and health situation analyses that explore the associations between living in risk areas in the proximity of the oil fields and several specific health outcomes known to be linked to petroleum products.

Several factors may affect this ecological association, including migration, misclassification of populations and events and other environmental, social and behavioral risk factors.

When evaluating these types of health situation analyses, it is advisable to recognize the following patterns of the key health indicators: (1) Extent; (2) Severity and (3) Trends. All of these patterns were reviewed adequately by including different types of risk assessments: mortality rates analysis, low-birth weight births analysis, birth defects analysis and cancer analysis.

Among the important methodological considerations for these assessments is the definition of the potential risk area and population included in this risk area. Census tracts and zip codes near the Inglewood Oil Field were selected as study area/population.

All assessments included comparisons of the health indicators of residents of the Inglewood Oil Field communities (IOFC) and Los Angeles Country as a whole. To complete these assessments, the study properly used age and race/ethnicity adjustment of rates. The effect of age and race/ethnicity was controlled to better identify the potential association of exposure and risk in the study area. If the study area experienced intensive migration during the period of the assessments, there is a potential source of selection bias.

The sources of vital statistics and health information are the best available for LA. The level of data coverage was very high: 100 % for mortality data and almost 100% for Low-Birth-Weight Births. Because of this high level of coverage rates no additional correction for under-registration or ill-defined causes was required in the calculation of rates. For birth defects information, not all birth defects were collected for all birth years (1998 was excluded because of incomplete data for this year); however the observed pattern of rates of birth defects did not show statistically significant difference in the Inglewood Oil Field communities compared to the county as a whole for 28 of the 29 categories of birth defects (1990-2002). The only category that showed an increased risk was "limb defect" for babies born in the IOF communities between 1990 and 1997 when compared countywide. This category is not known to be caused by exposure to benzene or other petroleum products. A potential source of bias in the assessment of birth defects is present if exposed pregnant women left the IOF area and babies were born in other parts of the country or outside the US. However, the observed pattern is consistent with no differences in the rates of birth defects during the 1990-2002 covered periods.

The selection of the causes for the cancer incidence distributions was adequate since it included the rates of five blood-related cancers linked to petroleum products, including the acute myelogenous leukemia (AML). The source of information was the USC-CSP as it is the population-based cancer registry for Los Angeles County. This is the best available source for cancer incidence data.

There is a potential bias in the information if high migration occurred in the study area, since information from exposed individuals is lost. It is not clear why the two periods were selected: 1972 to 1999 and 2000 to 2005. The time frames for these periods are very different. It is noted that an increased risk of chronic myelogenous leukemia (CML) in non-Hispanic whites was observed in the 2000 to 2005 period. Although it is stated that "CML has not been consistently linked with exposure to petroleum products from oil field or refineries", it is important to implement a monitoring surveillance system following the incidence trend for this type of cancer.

Also, it is recommended that Standardized Incidence-Morbidity Ratios (similar to the Standardized Mortality Ratios "SMR's") be incorporated in the assessments. Table 1 of the Keck's School of Medicine report included the observed and expected numbers of selected hematopoietic cancers in census tracts of IOFC during 1972-1999 and 2000-2005. The expected cases were presented as ranges. It is recommended that the expected cases and their confidence intervals be included. It is also recommended that SIR's be included in this assessment to recognize the excess of incidence rates and of mortality rates (for SMR's).

The interpretation of the results and acknowledgement of limitations

As stated in the presentation of the assessment, the analyses did not contemplate examination of causal associations; since specific data of exposure and health outcomes were not available in the study population and the study designs were not appropriate for recognizing causal relationships between exposure to risk factors related to petroleum products and selected health outcomes.

The four types of health assessments included in this study showed that the mortality rates, low-birth weight births rates, rates of birth defects for 28 categories of birth defects and the rates of four types of blood-related cancers in the periods covered were similar to the rates reported countrywide and that there were no statistically significant differences in the Inglewood Oil Field communities compared to the country as a whole. The assessments used the adequate rate adjustments and the statistical testing/confidence intervals needed to conclude that differences were not significant at the ecological level of the assessment. However, these assessments did not have the methodological strength to recognize small changes in the epidemiologic risk in this area.

It is noted that the four health assessments included the best available information and the assessments used proper epidemiologic and statistical methods for recognizing any significant risk differences at the ecological level of the IOFC population and LA county as a whole.

Recommendations

(1) As noted above, it is recommended that Standardized Incidence Ratios and Standardized Mortality Rates be included in future assessments, particularly due to the relative small areas of the IOF communities.

(2) Since no geospatial exploratory analysis was done to identify geospatial auto-correlations of cancer incident cases or cancer deaths in the IOF communities, it is recommended that a GIS application be included in future follow-ups assessments. Expanding the health analysis using geospatial statistics to explore the possibility of spatial clustering of cases and deaths related to the exposure will be of great analytical value.

(3) It is recommended that Equity Focused Health Impact Assessments be included as part of the next Community-wide health assessment. One of the aims of this type of assessment will be to assess the health consequences to the different population groups of the IOF communities of the new health monitoring system to be implemented.

(4) The development and regular analysis of an active health monitoring process for the IOF related health outcomes is strongly recommended.

(5) The incorporation of the civil society and community representatives in the Health Impact Assessment and Monitoring process will be of critical importance to the success of the public health monitoring process.

Thank you again for the opportunity to review this important health situation analysis for LA County. Please do not hesitate to contact me if you need additional clarification of my review.

Yours truly,

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